I Claim:

1. An apparatus comprising:

a medical image data file, the medical image data comprised of voxels, each voxel corresponding to an intensity value at a location within an image;

a processor;

a memory coupled to the processor;

an image data transformation mechanism residing in the memory, the image data transformation mechanism transforming the medical image data; calculating a gradient between voxels in the medical image data to create gradient data; rectifying the gradient data to create interface data; and displaying the interface data as output.

2. The apparatus according to Claim 1 wherein the image data transformation mechanism further comprises a filter to filter the interface data to remove spurious interface data.

3. The apparatus according to Claim 1 wherein each voxel is an intensity in Houndsfield Units.

4. The apparatus according to Claim 1 wherein the output comprises an Interface Plot wherein said Interface Plot is an image of interface data which illustrates gradient features in the medical image data.

5. The apparatus according to Claim 1 further comprising an image generating device to generate the medical image data file.

6. The apparatus according to Claim 1 wherein the medical image generating device is a CT scanner.

7. The apparatus according to Claim 1 wherein the medical image data file comprises a CT scan of a brain.

8. The apparatus of Claim 1 further comprising an image analysis mechanism residing in memory wherein the image analysis mechanism renders an output comprising a diagnostic indication of brain pathology.

9. The apparatus of Claim 8 wherein the image analysis mechanism comprises a free blood detection mechanism to detect the presence of intensity readings within the medical image data which indicates the presence of acute free blood in the brain.

10. The apparatus of Claim 8 wherein the image analysis mechanism comprises a mass detection mechanism to detect the presence of gradient data which defines an enclosed structure indicative of a mass in the brain.

11. The apparatus of Claim 8 wherein the image analysis mechanism comprises an edema detection mechanism to detect the presence of a decrease in gradient at a neuroanatomical region compared to the gradient measured in the corresponding region in the opposite hemisphere of the brain.

12. The apparatus of Claim 11 wherein the neuroanatomical region is one of the insular stripe, the interface between the caudate nucleus and the anterior horn of the lateral ventricle, and the cortical grey/white interface.

13. The apparatus of Claim 9 wherein the image analysis mechanism comprises an evaluation mechanism.

14. The apparatus of Claim 9 wherein the medical image data file comprises a CT scan of a brain and wherein the image data transformation mechanism displays the interface data as an Interface Plot illustrating gradient structures in corresponding locations in the brain.

15. An apparatus for assisting with diagnosis of brain pathology comprising:

brain image matrix data, the brain image matrix comprised of voxels;

a processor;

a memory coupled to the processor;

an image data transformation mechanism residing in the memory, the image data transformation mechanism taking the brain image matrix; calculating a gradient between the voxels to create a gradient matrix; rectifying the gradient matrix to create an interface matrix; applying a filter to create a filtered interface matrix; and displaying the filtered interface matrix as output for assisting with diagnosis of brain pathology.

16. The apparatus according to Claim 15 wherein the output comprises an Interface Plot wherein said Interface Plot is an image of the filtered interface matrix which illustrates gradient features in the brain image matrix data.

17. The apparatus according to Claim 15 further comprising an image generating device to generate the brain image matrix data.

18. The apparatus according to Claim 17 wherein the image generating device is a CT scanner.

19. The apparatus of Claim 15 further comprising an image analysis mechanism residing in memory wherein the image analysis mechanism renders an output comprising a diagnostic indication of brain pathology.

20. The apparatus of Claim 19 wherein the image analysis mechanism comprises a free blood detection mechanism to detect the presence of intensity readings within the medical image data which indicates the presence of acute free blood in the brain.

21. The apparatus of Claim 19 wherein the image analysis mechanism comprises an edema detection mechanism to detect the presence of a decrease in gradient in the neuroanatomical region compared to the gradient measured in the corresponding region in the opposite hemisphere of the brain.

22. The apparatus of Claim 21 wherein the neuroanatomical region is one of the insular stripe, the interface between the caudate nucleus and the anterior horn of the lateral ventricle, and the cortical grey/white interface.

23. A program product comprising:

(A) a brain image data transformation mechanism, the brain image data transformation mechanism using brain image data comprised of voxels in Houndsfield Units to calculate a gradient between the voxels to create gradient data; rectifying the gradient data to create interface data; applying a filter to create filtered interface data; and displaying the filtered interface matrix data as output;

(B) signal bearing media bearing the brain image data transformation mechanism.

24. The program product according to Claim 23 wherein the output comprises an Interface Plot.

25. The program product according to Claim 23 wherein the brain image data comprises data from an image generating device.

26. The program product according to Claim 24 wherein the image generating device is a CT scanner.

27. The apparatus of Claim 21 further comprising an image analysis mechanism residing in memory which renders an output comprising a diagnostic indication of brain pathology.

28. The apparatus of Claim 27 wherein the image analysis mechanism comprises a free blood detection mechanism to detect the presence of free blood in the brain.

29. The apparatus of Claim 27 wherein the image analysis mechanism comprises an edema detection mechanism to detect the presence of a decrease in gradient at a neuroanatomical region compared to the gradient measured in the corresponding region in the opposite hemisphere of the brain.

30. The apparatus of Claim 29 wherein the neuroanatomical region is one of the insular stripe, the interface between the caudate nucleus and the anterior horn of the lateral ventricle, and the cortical grey/white interface.

31. A method for assisting with the diagnosis of brain pathology comprising:

obtaining a brain image comprised of voxels arranged in an image matrix;

calculating a gradient between voxels to create a gradient data matrix;

rectifying the gradient data to create a rectified gradient data matrix;

applying a filter to the rectified gradient data to create filtered rectified gradient data matrix;

generating an output from the filtered rectified gradient data.

32. The method of Claim 30 wherein the output comprises an Interface Plot.

33. The method of Claim 30 further comprising an image generating device.

34. The method of Claim 33 wherein the image generating device is a CT scanner.

35. The method of Claim 30 further comprising an image analysis mechanism which renders an output comprising a diagnostic indication of brain pathology.

36. The method of Claim 35 wherein the image analysis mechanism comprises a free blood detection mechanism to detect the presence of acute free blood in the brain.

37. The method of Claim 35 wherein the image analysis mechanism comprises an ischemic injury detection mechanism to detect the presence of a decrease in gradient at a neuroanatomical region compared to the gradient measured in the corresponding neuroanatomical region in the opposite hemisphere of the brain.

38. The method of Claim 37 wherein the neuroanatomical region is one of the insular stripe, the interface between the caudate nucleus and the anterior horn of the lateral ventricle, and the cortical grey/white interface.

39. A method for diagnosing brain edema comprising the steps of:

obtaining a digital matrix CT scan image;

transforming the digital matrix CT scan image to create gradient data;

generating output which illustrates the gradient data;

analyzing the output to determine if edema is present.

40. A method for diagnosing brain pathology comprising the steps of:

obtaining a digital matrix brain image;

analyzing the brain image to find acute free blood;

analyzing the brain image to find sulcal effacement;

transforming the digital matrix brain image to create a transformed brain image;

analyzing the transformed brain image to find edema;

analyzing the transformed brain image to find a mass;

compiling the analyses to generate an output;

wherein the output comprises an indication of diagnosis of brain pathology.

41. The method of Claim 40 further comprising obtaining patient information.

42. The method of Claim 41 further comprising analyzing patient information.